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EXAMINER

DODDS, HAROLD E

ART UNIT	PAPER NUMBER
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2177

DATE MAILED: 09/02/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,940

Applicant(s)

MERRELLS ET AL.

Examiner

Harold E. Dodds, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6, 8.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 5-7, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. ("The LDUP Replication Update Protocol"), Cai et al. (U.S. Patent Application Publication No. 2001/0016880), and Shaheen et al. (U.S. Patent No. 5,434,994).

3. Stokes renders obvious independent claim 1 by the following:
"...a supplier server..." at p. 3, sec. 4.
"...a consumer server in communication with the supplier server..." at p. 3, sec. 4.

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"...that manage replication of data contained within the directory server..." at pp. 2 and 3, sec. 3.

"...from the supplier server to the consumer server..." at p. 3, sec. 4.

"...maintained on the consumer server..." at p. 3, sec. 4.

"...of data replicated to the consumer server..." at p. 3, sec. 4.

"...wherein replication of data..." at p. 3, sec. 4.

Stokes does not teach the use of pluggable services and the use of a change log.

4. However, Cai teaches the use of pluggable services as follows:

"...a plurality of pluggable services..." at pp. 2 and 3, par. 0045.

"...is managed by the plurality of pluggable services..." at pp. 2 and 3, par. 0045.

It would have been obvious to one of ordinary skill at the time of the invention to combine Cai with Stokes to provide pluggable services in order to support many formats of data during the replication of data from one server to another and provide greater acceptance of the system. Stokes and Cai have related applications and use many technologies in common. Stokes and Cai teach the use of directories, the use of servers, the use of protocol, the use of documents, and the replicating or updating of data. Stokes provides supplier and consumer servers and directories and Cai provides pluggable services.

Cai does not teach the use of change logs.

5. However, Shaheen teaches the use of change logs as follows:

"...and a change log..." at col. 5, lines 12-14.

"...using the change log..." at col. 5, lines 12-14.

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It would have been obvious to one of ordinary skill at the time of the invention to combine Shaheen with Stokes and Cai to provide change logs in order to record all operations that cause a change to the replica data. Stokes, Cai, and Shaheen have related applications and use many technologies in common. Stokes, Cai, and Shaheen teach the use of directories, the use of servers, the use of protocol, and the replicating or updating of data and Cai and Shaheen teach the use of computers and the use of networks. Stokes provides supplier and consumer servers and directories, Cai provides pluggable services, and Shaheen provides change logs.

6. As per claim 5, the "...plurality of pluggable services..." is taught by Cai at pp. 2 and 3, par. 0045, the "...comprises an update resolution procedure service..." is taught by Stokes at pp. 2 and 3, sec. 3., the "...determining ordering of operations..." is taught by Stokes at p. 2 and 3, sec. 3., the "...by comparing a first change sequence number..." is taught by Stokes at p. 9, sec. 5.3.2.1., the "...of the supplier server..." is taught by Stokes at p. 3, sec. 4., the "...to a second change sequence number..." is taught by Stokes at p. 9, sec. 5.3.2.1., and the "...of the consumer server..." is taught by Stokes at p. 3, sec. 4.

7. As per claim 6, the "...plurality of pluggable services..." is taught by Cai at p. 2 and 3, par. 0045,

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the "...comprises a replica update vector service...", is taught by Stokes at p. 6, sec. 5.2.,

the "...determining a set of updates to be sent to a data replica...", is taught by Stokes at p. 6, sec. 5.2.,

the "...by consulting a replica update vector...", is taught by Stokes at p. 6, sec. 5.2.,

and the "...for the consumer server...", is taught by Stokes at p. 5, sec. 3.4.

8. As per claim 7, the "...replica update vector...", is taught by Stokes at p. 6, sec. 5.2.

and the "...comprises a change sequence number for every data replica...", is taught by Stokes at pp. 8 and 9, sec. 5.3.2.1.

9. As per claim 9, the "...plurality of pluggable services...", is taught by Cai at pp. 2 and 3, par. 0045,

the "...comprises a server-initiated replication protocol service...", is taught by Stokes at p. 3, sec. 4.,

and the "...to store and update state information...", is taught by Stokes at p. 8, sec. 5.3.2., pp. 8 and 9, sec. 5.3.2.1., and p. 9, sec. 5.3.2.3.

10. As per claim 10, the "...state information comprises a uniqueid...", is taught by Stokes at p. 8, sec. 5.3.2. and pp. 8 and 9, sec. 5.3.2.1.,

and the "...and a plurality of change sequence numbers for an entry...", is taught by Stokes at p. 8-9, sec. 5.3.2.1.

11. As per claim 11, the "...plurality of pluggable services...", is taught by Cai at p. 2 and 3, par. 0045,

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the "...comprises an incremental update algorithm service...", is taught by

Shaheen at col. 6, lines 18-23,

the "...comparing a first replica update vector...", is taught by Stokes at p. 11, sec. 5.4.,

the "...of the supplier server...", is taught by Stokes at p. 3, sec. 4.,

the "...and a second replica update vector...", is taught by Stokes at p. 11, sec. 5.4.,

the "...of the consumer server...", is taught by Stokes at p. 3, sec. 4.,

the "...to order an update sequence...", is taught by Stokes at p. 2 and 3, sec. 3.,

and the "...from the change log...", is taught by Shaheen at col. 5, lines 12-14.

12. Claims 2-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes, Cai, and Shaheen as applied to claim 1 above, and further in view of Dietterich et al. (U.S. Patent No. 6,647,393).

As per claim 2, the "...copied between the supplier server and the consumer server...", is taught by Stokes at p. 3, sec. 4.,
the "...wherein replication of data...", is taught by Stokes at p. 3, sec. 4.,
the "...is managed by the plurality of pluggable services...", is taught by Cai at p. 2 and 3, par. 0045,
but the "...directory information tree..."
and the "...using the directory information tree....," is not taught by either Stokes, Cai, or Shaheen.

However, Dietterich teaches the use of a directory information tree as follows:

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"...The set 66 thus is a collection of directory information organized hierarchically, for example as a tree structure or as a graph, rooted in the root 80..." at col. 6, lines 58-61.

It would have been obvious to one of ordinary skill at the time of the invention to combine Dietterich with Stokes, Cai, and Shaheen to provide directories organized in a tree structures in order to use standard structures for directories in operating systems and gain acceptance of the system. Stokes, Cai, Shaheen, Dietterich have related applications and use many technologies in common. Stokes, Cai, Shaheen, and Dietterich teach the use of directories, the use of servers, the use of protocol, and the replicating or updating of data and Cai, Shaheen, and Dietterich teach the use of computers and the use of networks. Stokes provides supplier and consumer servers and directories, Cai provides pluggable services, Shaheen provides change logs, and Dietterich provides directories organized in a tree structures.

13. As per claim 3, the "...directory information subtree...", is taught by Dietterich at col. 6, lines 58-67,
the "...copied between the supplier server and the consumer server...", is taught by Stokes at p. 3, sec. 4.,
the "...wherein replication of data...", is taught by Stokes at p. 3, sec. 4.,
the "...is managed by the plurality of pluggable services...", is taught by Cai at pp. 2 and 3, par. 0045,
and the "...using the directory information subtree...", is taught by Dietterich at col. 6, lines 58-67.

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14. As per claim 4, the "...plurality of pluggable services..." is taught by Cai at pp. 2 and 3, par. 0045, the "...comprises a change sequence number service..." is taught by Stokes at p. 9, sec. 5.3.2.1., the "...creating a unique combination of numbers..." is taught by Stokes at p. 9, sec. 5.3.2.1., the "...used to determine ordering of an update operation..." is taught by Stokes at pp. 2 and 3, sec. 3., the "...for an attribute value in an entry..." is taught by Stokes at p. 10, sec. 5.3.2.5. and p. 8, sec. 5.3.1, and the "...in the directory information tree..." is taught by Dietterich at col. 6, lines 58-61.

15. As per claim 8, the "...plurality of pluggable services..." is taught by Cai at pp. 2 and 3, par. 0045, the "...comprises a replication agreement service..." is taught by Dietterich at col. 10, lines 31-39, "...comprising an entry in the directory information tree..." is taught by Dietterich at col. 6, lines 58-67, and the "...describing a relationship between the supplier server and the consumer server..." is taught by Stokes at pp. 4 and 5, sec. 4.2.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes, Cai, and Shaheen as applied to claim 1 above, and further in view of Shih et al. (U.S. Patent No. 6,615,223).

As per claim 12, the "...plurality of pluggable services..." is taught by Cai at p. 2 and 3, par. 0045, the "...comprises a uniqueid service assigning a unique identifier to an entry..." is taught by Stokes at p. 8, sec. 5.3.1., but the "...added by a client..." is not taught by either Stokes, Cai, or Shaheen.

However, Shih teaches clients adding entries as follows:

"...Consider if a client at replication site 302 wishes to add a new LDAP directory entry to the DIT 20 of FIG. 5..." at col. 8, lines 56-57.

It would have been obvious to one of ordinary skill at the time of the invention to combine Shih with Stokes, Cai, and Shaheen to allow clients to add entries in order to provide flexibility in updating the structures and gain acceptance of the system. Stokes, Cai, Shaheen, Shih have related applications and use many technologies in common. Stokes, Cai, Shaheen, and Shih teach the use of directories, the use of servers, the use of protocol, and the replicating or updating of data and Cai, Shaheen, and Dietterich teach the use of computers and the use of networks. Stokes provides supplier and consumer servers and directories, Cai provides pluggable services, Shaheen provides change logs, and Shih allows clients to add entries.

17. Claims 13, 14, 20-22, 24-26, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes et al. ("The LDUP Replication Update Protocol"), Shaheen et al. (U.S. Patent No. 5,434,994), and Bahl (U.S. Patent No. 6,782,398).

18. Stokes renders obvious independent claims 13 and 29 by the following:

"...in the directory server..." at p. 3, sec 4.

"...contained within the directory server from the supplier server to the consumer server..." at p. 3, sec 4.

"...replicated to the consumer server..." at p. 3, sec 4.

"...and updating data replicated to the consumer server..." at pp. 3 and 4, sec. 4.1.

Stokes does not teach the use of services for data replication, the use of change logs, and the determining a need to replicate data.

19. However, Shaheen teaches the use of services for data replication and the use of change logs as follows:

"...using a plurality of services to manage replication of data..." at col. 4, lines 18-21 and col. 2, lines 55-61.

"...maintaining a change log of data..." at col. 5, lines 12-14.

It would have been obvious to one of ordinary skill at the time of the invention to combine Shaheen with Stokes to provide services to manage the replication of data in order to use services provided by servers to control the access to other computers in a network to replicate data. Likewise, it would have been obvious to one of ordinary skill at the time of the invention to combine Shaheen with Stokes to provide change logs in order to record all operations that cause a change to the replica data. Stokes and Shaheen have related applications and use many technologies in common. Stokes and Shaheen teach

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the use of directories, the use of servers, the use of protocol, and the replicating of data. Stokes provides supplier and consumer servers and directories and Shaheen provides services to manage replication of data and change logs.

Shaheen does not teach the determining a need to replicate data.

20. However, Bahl teaches the determining a need to replicate data as follows:

"...determining a need to replicate data..." at col. 7, lines 7-10.

It would have been obvious to one of ordinary skill at the time of the invention to combine Bahl with Stokes and Shaheen to determine a need the replication of data for individual entries in order to provide the minimum update time to replicate data for new or modified entries and provide maximum data accuracy at minimum cost. Stokes, Shaheen, and Bahl have related applications and use many technologies in common. Stokes, Shaheen, and Bahl teach the use of servers, the use of protocol, and the replicating of data and Shaheen and Bahl teach the use of computers, the use of databases, and the use of networks. Stokes provides supplier and consumer servers and directories, Shaheen provides services to manage replication of data and change logs, and Bahl determines the need to replicate data.

21. As per claim 14, the "...resolving conflicts of the replicated data..." is taught by Shaheen at col. 7, lines 66-68 and col. 2, lines 55-61, the "...using a time stamp..." is taught by Bahl at col. 6, lines 20-28, the "...to determine the consumer server..." is taught by Stokes at p. 3, sec. 4.,

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and the "...holding the most recent version of the replicated data..." is taught by Bahl at col. 6, lines 40-43 and col. 7, lines 18-20.

22. As per claim 20, the "...plurality of services..." is taught by Shaheen at col. 4, lines 18-21,
the "...comprises an update resolution procedure service..." is taught by Stokes at p. 2 and 3, sec. 3.,
the "...determining ordering of operations..." is taught by Stokes at pp. 2 and 3, sec. 3.,
the "...by comparing a first change sequence number..." is taught by Stokes at p. 9, sec. 5.3.2.1,
the "...of the supplier server..." is taught by Stokes at p. 3, sec. 4.,
the "...to a second change sequence number..." is taught by Stokes at p. 9, sec. 5.3.2.1,
and the "...of the consumer server..." is taught by Stokes at p. 3, sec. 4.

23. As per claim 21, the "...plurality of services..." is taught by Shaheen at col. 4, lines 18-21,
the "...comprises a replica update vector service..." is taught by Stokes at p. 6, sec. 5.2.,
the "...determining a set of updates to be sent to a data replica..." is taught by Stokes at p. 6, sec. 5.2.,
the "...by consulting a replica update vector..." is taught by Stokes at p. 6, sec. 5.2.,
and the "...for the consumer server..." is taught by Stokes at p. 5, sec. 3.4.

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24. As per claim 22, the "...replica update vector...", is taught by Stokes at p. 6, sec. 5.2.

and the "...comprises a change sequence number for every data replica...", is taught by Stokes at p. 8 and 9, sec. 5.3.2.1.

25. As per claim 24, the "...plurality of services...", is taught by Shaheen at col. 4, lines 18-21,

the "...comprises a server-initiated replication protocol service...", is taught by Stokes at p. 3, sec. 4.,

and the "...to store and update state information...", is taught by Stokes at p. 8, sec. 5.3.2., p. 8-9, sec. 5.3.2.1., and p. 9, sec. 5.3.2.3.

26. As per claim 25, the "...state information comprises a uniqueid...", is taught by Stokes at p. 8, sec. 5.3.2. and pp. 8 and 9, sec. 5.3.2.1.

and the "...and a plurality of change sequence numbers for an entry...", is taught by Stokes at pp. 8 and 9, sec. 5.3.2.1.

27. As per claim 26, the "...the plurality of services...", is taught by Shaheen at col. 4, lines 18-21,

the "...comprises an incremental update algorithm service...", is taught by Shaheen at col. 6, lines 18-23,

the "...comparing a first replica update vector...", is taught by Stokes at p. 11, sec. 5.4.,

the "...of the supplier server...", is taught by Stokes at p. 3, sec. 4.,

the "...and a second replica update vector...", is taught by Stokes at p. 11, sec. 5.4.,

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the "...of the consumer server...", is taught by Stokes at p. 3, sec. 4.,
the "...to order an update sequence...", is taught by Stokes at pp. 2 and 3, sec. 3.,
and the "...from the change log...", is taught by Shaheen at col. 5, lines 12-14.

28. As per independent claim 28, the "...determining a need to replicate data...", is taught by Bahl at col. 7, lines 7-10,
the "...in the directory server...", is taught by Stokes at p. 3, sec 4.,
the "...using a plurality of services to manage replication of data...", is taught by Shaheen at col. 4, lines 18-21 and col. 2, lines 55-61,
the "...contained within the directory server from the supplier server to the consumer server...", is taught by Stokes at p. 3, sec 4.,
the "...maintaining a change log of data...", is taught by Shaheen at col. 5, lines 12-14,
the "...replicated to the consumer server...", is taught by Stokes at p. 3, sec 4.,
the "...updating data replicated to the consumer server...", is taught by Stokes at p. 3, sec 4.,

the "...and resolving conflicts of the replicated data...", is taught by Shaheen at col. 7, lines 66-68 and col. 2, lines 55-61,
the "...using a time stamp...", is taught by Bahl at col. 6, lines 20-28,
the "...to determine the consumer server...", is taught by Stokes at p. 3, sec. 4.,
and the "...holding the most recent version of the replicated data...", is taught by Bahl at col. 6, lines 40-43 and col. 7, lines 18-20.

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29. Claims 15, 16, 19, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes, Shaheen, and Bahl as applied to claim 13 above, and further in view of Cai and Dietterich.

30. As per claim 15, the "...replication of data..." is taught by Stokes at p. 3, sec. 4., but the "...is managed by the plurality of pluggable services..." and the "...using a directory information tree..." is not taught by either Stokes, Shaheen, or Bahl.

However, Cai teaches the use of pluggable services as follows:

"...The pluggable service delivery platform shown in FIG. 1 comprises three parts, Device Abstraction Layer (DAL), Service Abstraction Layer (SAL) and Kernel Service Engine..." at pp. 2 and 3, par. 0045.

It would have been obvious to one of ordinary skill at the time of the invention to combine Cai with Stokes, Shaheen, and Bahl to provide pluggable services in order to support many formats of data during the replication of data from one server to another and provide greater acceptance of the system. Stokes, Shaheen, Bahl, and Cai have related applications and use many technologies in common. Stokes, Shaheen, Bahl, and Cai teach the use of servers, the use of protocol, and the replicating or updating of data, Stokes, Shaheen, and Cai teach the use of directories, and Shaheen, Bahl, and Kai teach the use of computers and the use of networks. Stokes provides supplier and consumer servers and directories, Shaheen provides services to manage replication of data and change logs, Bahl determines the need to replicate data, and Kai provides the pluggable services.

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Kai does not teach the use of directory information trees.

However, Dietterich teaches the use of a directory information tree as follows:

"...The set 66 thus is a collection of directory information organized hierarchically, for example as a tree structure or as a graph, rooted in the root 80..." at col. 6, lines 58-61.

It would have been obvious to one of ordinary skill at the time of the invention to combine Dietterich with Stokes, Shaheen, Bahl, and Cai to provide directories organized in a tree structures in order to use standard structures for directories in operating systems and gain acceptance of the system. Stokes, Shaheen, Bahl, Cai, and Dietterich have related applications and use many technologies in common. Stokes, Shaheen, Bahl, Cai, and Dietterich teach the use of servers, the use of protocol, and the replicating or updating of data, Stokes, Shaheen, Cai, and Dietterich teach the use of directories, and Shaheen, Bahl, Kai, and Dietterich teach the use of computers and the use of networks. Stokes provides supplier and consumer servers and directories, Shaheen provides services to manage replication of data and change logs, Bahl determines the need to replicate data, Kai provides pluggable services, and Dietterich provides directories organized as tree structures.

31. As per claim 16, the "...replication of data..." is taught by Stokes at p. 3, sec. 4., the "...is managed by the plurality of pluggable services..." is taught by Cai at pp. 2 and 3, par. 0045,

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and the "...using a directory information subtree..." is taught by Dietterich at col. 6, lines 58-67.

32. As per claim 19, the "...plurality of services..." is taught by Shaheen at col. 4, lines 18-21,
the "...comprises a change sequence number service..." is taught by Stokes at p. 9, sec. 5.3.2.1.,
the "...creating a unique combination of numbers..." is taught by Stokes at p. 9, sec. 5.3.2.1.,
the "...used to determine ordering of an update operation..." is taught by Stokes at p. 2 and 3, sec. 3.,
the "...for an attribute value in an entry..." is taught by Stikes at p. 10, sec. 5.3.2.5. and p. 8, sec. 5.3.1,
and the "...in the directory information tree..." is taught by Dietterich at col. 6, lines 58-61.

33. As per claim 23, the "...plurality of services..." is taught by Shaheen at col. 4, lines 18-21,
the "...comprises a replication agreement service..." is taught by Dietterich at col. 10, lines 31-39,
"...comprising an entry in the directory information tree..." is taught by Dietterich at col. 6, lines 58-67,
and the "...describing a relationship between the supplier server and the consumer server..." is taught by Stokes at p. 4 and 5, sec. 4.2.

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34. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes, Shaheen, and Bahl as applied to claim 13 above, and further in view of Aiello et al. (U.S. Patent No. 6,397,329).

As per claim 13, the "...updating data..." is taught by Stokes at p. 3, sec 4.,

but the "...is performed with a incremental update protocol..." is not taught by either Stokes, Shaheen, or Bahl.

However, Aiello teaches the use of incremental update protocol as follows;

"...FIGS. 10A and 10B illustrate an incremental update method according to a third embodiment of the present invention..." at col. 8, lines 26-28.

"...Currently a certificate revocation list (CRL) protocol is used by some CAs..." at col. 4, lines 12-13.

It would have been obvious to one of ordinary skill at the time of the invention to combine Aiello with Stokes, Shaheen, and Bahl to provide incremental update protocol in order to reduce the cost and time required to replicate the data between computers in networks. Stokes, Shaheen, Bahl, and Aiello have related applications and use many technologies in common. Stokes, Shaheen, Bahl, and Aiello teach the use of protocol and the replicating of data, Stokes, Shaheen, and Aiello teach the use of directories, and Shaheen, Bahl, and Kai teach the use of computers and the use of networks. Stokes provides supplier and consumer servers and directories, Shaheen provides services to manage replication of data and change logs, Bahl determines the need to replicate data, and Aiello provides incremental update protocol.

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35. As per claim 18, the "...updating data..." is taught by Stokes at p. 3, sec 4.

and is performed with a total update protocol..." is taught by Aiello at col. 17, lines 51-52 and col. 4, lines 12-13.

36. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stokes, Shaheen, and Bahl as applied to claim 13 above, and further in view of Shih.

As per claim 27, the "...plurality of services..." is taught by Shaheen at col. 4, lines 18-21,

the "...comprises a uniqueid service assigning a unique identifier to an entry..." is taught by Stokes at p. 8, sec. 5.3.1.,

but the "...added by a client..." is not taught by either Stokes, Shaheen, or Bahl.

However, Shih teaches clients adding entries as follows:

"...Consider if a client at replication site 302 wishes to add a new LDAP directory entry to the DIT 20 of FIG. 5..." at col. 8, lines 56-57.

It would have been obvious to one of ordinary skill at the time of the invention to combine Shih with Stokes, Shaheen, and Bahl allow clients to add entries in order to provide flexibility in updating the structures and gain acceptance of the system. Stokes, Shaheen, Bahl, and Shih have related applications and use many technologies in common. Stokes, Shaheen, Bahl, and Shih teach the use of servers, the use of protocol, and the replicating of data, Stokes, Shaheen, and Shih teach the use of directories, and Shaheen, Bahl, and Shih teach the use of computers and the use of networks. Stokes provides

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supplier and consumer servers and directories, Shaheen provides services to manage replication of data and change logs, Bahl determines the need to replicate data, and Shih allows clients to add entries.

Conclusion

37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harold E. Dodds, Jr. whose telephone number is (703)-305-1802. The examiner can normally be reached on Monday - Friday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on (703)-305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harold E. Dodds, Jr.

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Patent Examiner
August 30, 2004


GRETA ROBINSON
PRIMARY EXAMINER